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“The Shape and Survival of High-velocity Clouds ”

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Since several decades it became observationally manifested that our Milky Way (MW) is steadily bombarded by infalling gas clouds over a large velocities range. For those with velocities lower than the MW escape velocity their origin is still under debate, if of galactic origin as a fountain or intergalactic.

In fact, high-velocity clouds (HVCs) must originate from the intergalactic space. Various questions can be addressed to these HVCs from cosmological to plasmaphysical problems. Since these infalling extragalactic clouds contain highly subsolar metallicity they could represent the cosmological building blocks which assemble to larger galaxies in the hierarchical structure-formation scenario of CDM cosmology. But then they are expected to be hosted by Dark Matter (DM) subhalos. From the Magellanic Stream, on the other hand, HVCs are stripped off and rain down towards the MW which cannot contain DM. How can one distinguish between DM-supported and DM-free HVCs? What can we learn from their shapes and metal content? Do HVCs passing the hot galactic halo gas survive and reach the MW disk?

This talk will address these problems by numerical models in comparison with observed HVCs and will discuss consequences for our astrophysical understanding.